

High-Magnesium Dolomite GIS Layer

This GIS layer displays mapped geologic units having high-magnesium or high-purity dolomite resource potential in Utah. High-magnesium dolomite typically contains a minimum of about 42% MgCO_3 and is used for a variety of chemical applications. Several dolomite-bearing geologic units in Utah have potential for high-magnesium dolomite. Where possible, we used the most recent GIS data from 1:100,000-scale geologic mapping to build this layer. Where detailed mapping was unavailable, we used the 1:500,000-scale geologic map of Utah.

Typically, only specific zones within a geologic formation are high-magnesium dolomite, so the entire mapped exposure is not always representative of the resource. Each polygon within the high-magnesium dolomite has the following associated attributes: geologic unit name, unit age, resource potential ranking, and geologic map reference.

All of the geologic units in the layer are assumed to have some resource potential for high-magnesium dolomite based on available data. We assigned a “**high**” or “**moderate**” resource potential ranking to geologic units in areas that have the most substantive data to suggest presence of high-magnesium dolomite resources. Our assigned resource potential was primarily based on past production, analytical data, and unit descriptions from the source map. The general guidelines we used to assign potential are described below. Positive elements of geologic unit descriptions typically include thick or massive bedding. Indications of chert or other siliceous material, thin bedding, or recessiveness often suggest that dolomite may not have high-magnesium potential. Definition of areas that were given a similar ranking was somewhat subjective, but typically was confined to individual mountain ranges; spatial distribution of analytical data was also considered.

Typically, we assigned a “**high**” resource potential to dolomite-bearing geologic units in areas where the unit has been a significant source of produced high-magnesium dolomite, extensive analytical data showing high MgCO_3 content are available (typically more than 15 samples), or a combination of some production and some analytical data suggest potential.

“**Moderate**” resource potential was assigned to geologic units in areas where the unit has been a more minor source of produced high-magnesium dolomite, some analytical data show high MgCO_3 content (typically five or more samples) and a positive description is present, or a combination of limited production and limited analytical data.

We assigned an “**undetermined**” resource potential to units where some data suggest potential, but the data are limited. These include dolomite-bearing units in areas where only a few analytical data indicate potential, units that show potential elsewhere (based on analytical or production data) but limited or no data are available in the area, or units that have a positive description but no additional supporting data. We also typically assigned an “**undetermined**” resource potential when only 1:500,000-scale mapping was available.

This is not an exhaustive dataset. Several dolomite-bearing geologic units in Utah were not selected for this layer. These units may possess high-magnesium dolomite but existing data or general lack of data led us to exclude them from this dataset.

NOTE: Our determinations of high-magnesium dolomite resource potential DO NOT imply a determination of locatability for claim-staking purposes.

Data used to evaluate high-magnesium dolomite for this layer came from several published and unpublished sources.

Useful references:

Morris, H.T., 1964, Limestone and dolomite, *in* Hilpert, L.S., editor, Mineral and water resources of Utah: Utah Geological and Mineralogical Survey Bulletin 73, p. 188-194.

Tripp, B.T., Kirschbaum, M.J., Vanden Berg, M.D., Rupke, A.L., Gwynn, J.W., Boden, T., and Blackett, R.E., 2006, Chemical analyses of selected limestone, silica, and dolomite samples collected in northwest Utah, *in* Harty, K.M., and Tabet, D.E., editors, Geology of northwest Utah: Utah Geological Association Publication 34, CD-ROM, papers individually paginated, 16 p., 6 appendices.

Williams, J.S., 1958, Geologic atlas of Utah—Cache County: Utah Geological and Mineralogical Survey Bulletin 64, 98 p.